STC

378
.748
DE 1881

378.748
PoE 1881

378.748
POE 1881

for competition

(A)

1856

b.

LIBRARY OF THE UNIVERSITY OF PENNSYLVANIA

Caries of the teeth.

Carl P. H. Haas.

Dental Department.

378.748
POE 1881

Health and contentment are of the greatest importance to man, in order that other things may be of any value to him. Contentment depends mainly upon health, and this can never be present, unless all the organs of digestion are in perfect order. — The condition of their health is, that the first organ, which acts upon the food, should be able to perform its work efficiently; because, if it is not able to do that, the stomach will then have too much work to perform, and will, consequently, become impaired, and the health destroyed. —

Now the teeth constitute that organ, which first acts upon the food, and chief among the diseases which injure their efficiency, is that, which is technically termed caries, and which tends to poison the secretions of the mouth. —

However, the term caries really signifies a process

g. Univ. of Tor.

of inflammation, which is not what is meant, when applied in its ordinary sense to the teeth, which implies only a loss of substance, supported by a process of chemical decomposition, united with a vital reaction. —

The caries of the bones differs from that of the teeth in the following manner viz.: the former works from within, outwards, from the soft, to the hard parts; but the latter, in quite a different way, i.e. from the outside, to the inside, and from the hard to the soft parts. —

This disease, which is so frequently met with, has occupied the attention of physicians for the past few centuries, and many different theories have been advanced upon it. Even Hippocrates was acquainted with this disease, which, he thought, was occasioned by the impurity of the blood, and by the generally corrupt state of the

humors of the body. The Arabians believed, that it was caused by a species of small worms, which preyed upon the teeth, and this was received from during the greater part of the middle ages. From that time, until the beginning of the present century, it was, that the hard substances of the teeth possessed vascular tissue, and that caries was a process of inflammation, beginning from the inside of the tooth. And perhaps, from that time arose the incorrect application of the term caries to this disease. — Finally, at the beginning of this century was proposed that theory, upon which all late theories have been founded viz.: the action of the chemical influence of substances on the hard tissues of the teeth. And, while there as now three Grand Divisions recognized in the Animal Kingdom Dr. Linné. — A classification was then made of the diseases

forms and stages of this disease, termed caries, as for example, caries inflammatoria; caries mortifera, in which attention to the presence or influence as protococcus dentalis is implied; caries vegetativa, in which is meant the presence of a vegetable or fungus or parasite, as leptothrix buccalis and caries chemica. —

Miller, a distinguished parasitist, says, that the leptothrix acts against caries in the dentine, by filling out the tooth-vessels with salts of lime, and with consolidation of the fibrils. —

Tebe and Rottenstein, two German dentists are of opinion, that the leptothrix buccalis is the principal cause of caries; still this allow, or rather some influence to the chemical influences. —

Coleman says, caries is, as already said, a process of chemical decomposition in connection with that of a vital reaction; and it cannot

[illegible] said with caries profunda not fatal or not, under such a notion as that coccus contalis and leptothrix buccalis.

Some have asserted, that there exists caries interna as well as caries externa. Caries interna, certainly, cannot exist in that sense, viz.: that it should begin from within outwards, in a tooth perfectly sound, and free from injuries. The notion of the presence of caries interna in such a case, must be founded in error. We can only find in a tooth apparently sound and free from all external injury without seeing an opening (any opening) on the outside; but if we, in such a case, were to examine the tooth with a magnifying glass, we should find a white point, not so visible as the other enamel; which fact shows us that the dental tissue at this point have passed acids, and that

we consequently have in such a case caries sicca.
We have thus one caries vitrea and we divide
this into I caries chronica superficialis sive vitrea,
which, as the term implies, works very slowly,
superficially, is dry and almost always without
any pain; and II. caries acuta sive ventosa,
which works rapidly towards the pulp, and the
nearer it approaches the more acutely it be-
comes the pain. —

The former may remain almost without change
during a term of several years; but the latter
once commenced always progresses. The se-
paration of caries in two different forms
is not always possible, but it is, when practi-
cable, a most important distinction for the
prognosis and treatment. —

The nature of caries.

Caries always makes its first appearance

dull-white opaque spot on the enamel and in the beginning this spot is invisible to the naked eye. — As it progresses it acquires a yellowish color, and passes through all the different shades of color, until it becomes very dark, and, as a rule there is then a deep cavity, and the decline is quite rapid. — When the Caries has reached the dentine of the enamel and the enamel, and has reached the dentine it proceeds much more rapidly through the softer substance, than through the harder enamel; the walls will be undermined, and when the cavity has become large, pieces of the walls will break off under the process of mastication; and the whole crown of the tooth will gradually be destroyed. —

Caries works towards the pulp in the form of a cone, with the base towards the outer

periphery of the body i. e. towards the name and with the axis inside, towards the centre, which is sup. This is so, because caries to owes the destruction caries, and the radiation of pulp. from a centre. —

Caries has been divided into three stages according to the size, form and depth of the destruction, but this is not of much practical importance; because the transition from one stage to another, is so gradual, that we cannot determine with precision the limit between them. This division of different stages is rather theoretically than practically useful. —

The writer frequently observes in the course of caries, arises from a diminution of the calcareous volume in the tooth-substance, and from an augmentation in the volume of the canals. The caries produces the —

-canals continue to swell, and occasionally the
swelling increases to that a cure that amalgam-
fillings are soon raised from the caries.
Caries in the cementum is also found, but
if the seat of the root must first be exposed.
The decay progresses into the dentine and
is precisely of the same nature as the caries,
which begins in the enamel. —
Caries acuta may e. for a tooth is
frail a vessel; while caries chronica may
remain in a state several years during
which time we may not call to ob-
serve any change or progress. Some
cases appear in young persons, others
in years or age, because the teeth at that
period are not completely developed; but
early mark its appearance in the teeth
of older persons. The caries is found

caries in old persons, but seldom in young ones. Though there are, of course, exceptions to both rules. —

In caries acuta the tones or color are light-yellow, and the lighter the color, the more rapidly the disease progresses; whereas, in caries chronica the darker the color, the more slowly the disease proceeds. Practically we may term the caries acuta, humida; because the dentine is quite soft; on the other hand, the caries chronica may be termed sicca, on account of the comparative hardness of the dentine. —

In the forme viz.: humida, we often find leptothrix buccalis, which is seldom found in the latter, viz: the sicca. —

Leptothrix buccalis is found on teeth with, as well as without caries. —

We know that no bacteria can live

against caries itself, but pus produces a reaction which is inflammation.

As soon as caries has laid its ravages bare, pain is experienced, an unpleasant sensitiveness is experienced, and sometimes even a severe pain. When this sensitiveness appears in caries superficialis or communis, we term it positive caries and when it is characterized by sudden and sharp pains, which are excited by the influence of cold or heat, of sour or sweet. —

It is very remarkable, that in caries the pain occurs only during the transition of the disease from the enamel to the dentine; and also, when it approaches very near to the pulp. — Those who first discovered the dentine-cells-apophyses, say, that the reproduction from the cells in the

the dentine-corpuscles are but a continuation of the dentine-cells, and, consequently, whatever affects the former, has a corresponding influence upon the latter, and through these again upon the nerve in the pulp. As soon as caries has passed the limit between the enamel and the dentine, the pain ceases; because then the canals are choked up in the dentine, which ensues, and are thus disabled from conducting the influence from without. —

Localisation of caries.

A tooth may be attacked in any part of its surface or sides as the masticating-surface; labial or buccal surfaces; upon the approximating-surfaces; that towards the middle of the mouth called mesial, and the opposite one named distal surface; and, on the sides or [illegible]. On the crown caries most frequently occurs on the masticating-surface.

because it is a good preservative to an acid and acrid remaining in the mouth after eating. On the dentes præcuspidales it is found, frequently, on the approximating surfaces; because these teeth are generally very close together. On the dentes incisivi and canini it appears chiefly on the approximating surfaces. That is, or ought to be, also found on the approximating surfaces of the molars, as well as on the masticating surfaces and edges of the other teeth. Another, though not so frequently occurring caries, is to be found on the colla dentis, and quite on the edge of the gingiva. This form of caries is most frequently attended with diseases of the gingiva; but is also found without any disease: and it is most frequently found on the dentes [illegible] and dentes sapientiæ inferiores and again on these, almost always,

avia ut in solo on the inva surface.
another vim favorite seat of caries, ut c.e, with
appil is not of frequent occurrence, is in the ano-
ne-tal [illegible] inval side of the [illegible] is visivi.
This name-old results from an anomalous de-
velopment of the enamel-organ, and affords us a fa-
vorable seat for caries, as the mastication sur-
face of the molars.-
According to a Table of Statistics collected a
finding caries is found most frequently in the
dentes molares primi inferiores, (in a united and
sixth cases out of a thousand); 2. in the dentes
molares primi superiores; 3. in the dentes molares se-
cundi inferiores; 4. in the dentes molares secun-
di superiores; 5. in the dentes bicuspidates secun-
di superiores; and 6. in the dentes bicuspidates secun-
di inferiores; 7. in the dentes bicuspidati primi superiores.
and 8. in the dentes bicuspidati primi inferiores;

the 9. dentes caninii; and 10. of the dentes caninii adscendentes; 11. of the dentes incisivi adscendentes; 12. of the dentes incisivi medii inferiores; 13. of the dentes caninii inferiores; 14. of the dentes incisivi medii inferiores; 15. of the dentes incisivi laterales inferiores; and, lastly, 16. of the dentes caninii inferiores, and of the latter, one of the teeth or a Forward were found to be carried. We may observe, that the dentes molares primi et secundi inferiores are more frequently decayed than the dentes molares superiores; but, on the contrary, the teeth as incisivi caninii, recessitate and dentes sapientiæ, are not frequently decayed in the upper, than in the lower jaw. [illegible] is not an unfrequent occurrence, to extract this tooth, in order to obtain more room, where the teeth are too close together. —

[illegible] to the [illegible] decayed [illegible]

in the upper and lower jaw. Caries in the upper jaw of decayed teeth in the lower in the upper jaw are as 3 to 2. — Caries, moreover, is more frequently met with in females than in males. Caries according to Magitot being that of 3 to 2, Morgan according to Professor Darby it is 3 to 1. —

Caries has the same character in the milk teeth as in the permanent teeth; though in the former, caries acuta is almost the only form of the disease met with, and that chiefly in the molars. —

It is a fact which we can daily witness, that the anterior incisivi in the upper jaw more frequently decay than the corresponding ones in the lower jaw; and it is thought that this arises from the manipulation of the saliva in the mouth in which case the upper ones would be more liable to decay. —

The symptoms of this disease are —

sive and suggestive. —

In the gaining of ideas, it is, regularly, a
disposition to obtain the objects, most of the existence.
Now, when not advanced we are not the objective
as well as the subjective, most of the primo; the
pain gain pain experienced, which is of com-
mon sense, when the disease has arrived at
the pus state; in which case the pain may be
almost insupportable. —

The progress of caries,

In caries the vital is the principle of advancing the sore; because a sore altered in the form of caries may continue almost without change, for a period of several years; as in the case caries acuta, the principle of gain to sore is diminished as the disease advances. In Fungus and Thick the walls of the cavity, the cause is the chance of gain and restoration

the tooth; and, of the causes, the primary and most
frequent is the presence of micro-organisms. We must see that the pulp, the predentium, also
named dentinum, and the gingiva are in good and healthy
condition; and we shall have to examine the mouth-
secretions with accuracy, and visit that the patient
is not in a cachectic condition, and afterwards, proceed to
the treatment of the tooth itself.

Causes of caries.

The causes of caries are separated into two principal classes, viz.: the predisposing or constitutional
and the exciting or local: the latter arising from
external influences, and being both chemical and
mechanical in nature.

The predisposing is by no means frequent, and is
to be found chiefly in anomalies in the tooth-
tissues and, principally, in the enamel; or, as more
rarely, in cases where the mouth or saliva

of the mandible, or with the dental arch itself affected with this disorder of the mandible, is deficient in time, and consequently more easily acted upon in the succession of the movements of each of this kind of teeth is as a unit with its fellow-teeth, with the other and the teeth which are free from dentia, and of the antagonist, and at the moment. In other words, in cases in corresponding teeth of each side of the same jaw: and the cause of this is, that this affected dentia influences, and that during their development in the jaw, and during their cutting, they are similarly affected; because we know that the corresponding teeth in the same jaw, progress simultaneously in their development and cutting.

We may often observe, in one person, teeth of good construction, and rapid cleaning,

On the contrary, in another person we may see the teeth of intricate structure, with many cavities, but in which the disease progresses very slowly, and causes little apparent change for a long period. In the one we shall on examining the mouth perceive with newspaper find, that these are very sour; whereas, in the latter, the secretions are alkaline or neutral, or contain very little acid. —

Many predisposing causes may be reckoned up, prevalence in whole families, and even races; an hereditary tendency to the disease. Where both parents have good teeth, those of their children will, general speaking, be found to be good also. If one of the parents has good, and the other bad teeth, as a rule the daughter will inherit the father's and the son the mother's teeth good or bad, as the case may be. —

Among the local causes, we must first mention

influence of the frequent soureis of the secretions of the mouth. The mouthfluids are composed of saliva and secretions from the labialan glands and all of these are most frequently alkaline, and even we can frequently meet with cases, where mouthfluids are sour, but that arises from a metamorphosis of the secretions, caused chiefly in the atmospheric air entering the mouth. Milkacid is that most frequently found in the mouth. We have also the ptyalin-secretions, mixed with ciliated epithelium-celles; and also residue from eating; all of which are favorable for the formation of acids. In nervous and weak Stomachs and general, in anomalies in the digestion, acids will arise from the Stomach into the mouth, and these acids are as a rule very strong. During pregnancy, we frequently find caries acuta, but, in that case, we always find the digestion out of order; and an acid

tion, cause of this caries, in that case, may be a deficiency of salts occasioned by the increased consumption by the tissues. Since, in order to supply this deficiency, it is sometimes important to administer to the mother, with in that condition, a judicious amount of salts or phosphate, which will furnish the due proportion of material required by the formation of bone and earthy tissue in the child. Probably, Leptothrix buccalis may also tend to promote caries; though it cannot be accounted for by itself, as a cause of it. —

In many of the drinks, moreover, which we use, we introduce into the mouth acids already formed, as those contained for instance in fruit-beverages, wines, mineral-waters, etc. — Also the water we daily use for drinking purposes, is apt to be very impure and, in some places though impregnated with iron. —

In daily life it is always said, that sugar is not good for the teeth; but it is not the sugar itself, but the acid formed from it, that does the injury. It is also commonly said that tobacco is injurious to the teeth; but experience proves that to be a absolute false. It lies as a black tartar most frequently over the inoval surface of the dentes incisivi inferiores and generally, the ordinary thin tartar lies beneath it. Under this nicotin covering caries has no sound; because the nicotin fills up the tubes and, in that manner prevents the action of the acids. The common tartar has no influence on the teeth in respect to producing caries; but, on the contrary, tends rather to preserve the tooth from this disease; however, the green tartar must be considered as a predisposing cause of caries, because we know, that the green tartar not only lies on the surface, as other tartar but that it

also [illegible] into the tubes in [illegible] and consequently has opened a way to the acids. —

The results of caries.

Caries may be cause of all the diseases which come within the province of the dentist to treat. —

Caries proceeds through the hard tissues of the tooth and acts injurious on the pulp and may occasion pulpitis, with all its results; among which is included periostitis, which again may again give rise to abscesses, ostitis, etc. etc. —

[illegible] or immediate results of caries a pain, an excavation of the tooth and its consequent inability to perform the function of mastication; and there will also be in the cavity an accumulation of residue from eating, and which will again cause a very bad taste and smell in the mouth. —

The neighbouring tooth will also be affected, not

Caries is a corrosion in cause by the tooth and is under the influence of the lesions accumulated in the first tooth. —

Caries, when far advanced, will cause the walls of the crown gradually to wear off and consequently the whole tooth to be destroyed. The result of this will be an opening in the side of the tooth, and the entire masticating-organ will become out of order; and, in the case of a front-tooth, it will produce an ugly appearance, and it will moreover, affect the speech of the person, and will be apt to prove very injurious to a person suffering with weak lungs, on account of the too great draught of air admitted into the mouth thro this opening. We may always observe a cavity in one of the crowns in the case of a person, who has lost any of the molars. —

When the roots and much decayed crowns are

allowed to remain in the mouth, may irritate the gingiva, the tongue, and cheeks by their sharp and jagged edges, and cause inflammation in these parts. —

Owing to nature's effort to supply the loss of dentine on the outside, occasioned by caries, there is found within or on the walls of the pulp-cavity, a secondary dentine, at a point exactly opposite to the outer cavity. — The manner in which the pulp caries progresses from the outside, the loss of this new-dentine is found, and the cause of which is to be found in the fact, that the pulp, when irritated, no longer produces dentine influences from without to the pulp, and consequently no longer sets up an reaction against them. This new-dentine is scarcely ever to be found existing in caries simplex, and rarely in caries acuta. It is found in the new dentine as a continuation of the dentinal canals, as in

are frequently very irregular, and to it round cells in every possible direction; and the more that is the case, the more rapidly the new formation proceeds. From this new-action, there may result a pressure on the pulp, accompanied with severe pain.

We see, then, that caries is a very common disease, and that, if it is not taken in time, it may lead to a great variety of diseases, and some of them of a very serious nature.

It is, therefore, of the greatest importance, for the sake of the child, that its teeth should be kept in a healthy condition, and its mouth perfectly clean and wholesome; and thus, we will save ourselves many additional, and oftentimes much severe and distressing pain.

Treatment of caries.

It is always impossible to arrest a process of caries, and to prevent a termination

it has once destroyed. All that can be done, is to arrest the progress of the disease, to remove the diseased portion, and to substitute for it some artificial substance in place of that, which has been destroyed; and to train the root to perform its accustomed function of nutrition, and thus to regain and preserve life in a tooth. The French, the Germans, the Swedes, the Norwegians and the Danes denote this process by a word, which root is „plomb", derived from the latin plumbum, which signifies lead, and which conveys the idea of filling the tooth with lead, which metal was formerly used, and which is a very good metal for the purpose. It has often been completely abandoned in after time by all good dentists, owing to the blackness, it imparts to the tooth, and the danger of the poisonous effect, which may result from it.

The term used by the Americans viz.: to fill, is a
most expressive one, the process, and its use, consequent,
is becoming general in Europe. —
After the filling of a tooth, it will be painful
used to keep the mouth in cool water, and must
not come into too thick a mass. For
this will injure the enamel, no too soft a mass because
this will not remove all the residue, which collects
between the teeth. —
Generally speaking, but few persons understand how
to use the brush properly. They use it horizontally
across the teeth, whereas, the gums should be rubbed
vertically, with a downward pressure upon the teeth
of the upper jaw, and with an upward pressure
upon those of the lower jaw. Some persons have
to brush their teeth after mastication — and indeed
we can say, that this is quite as important as brushing
them on the labial surfaces. —

[illegible] ought to [illegible] [illegible] [illegible] [illegible]
and evening. — It is, indeed, of no importance,
[illegible] is to be done in the evening, than in the morning;
for it is during the night, that the [illegible]
[illegible] can have time to produce acids, since the
mouth is then in a state of perfect rest. —
It is also sufficient to use water and a good
brush. But if there is a desire to [illegible] a
[illegible], it is better to use a little tooth-powder, and
that most to be recommended is the [illegible] pro-
aba, in the form of pulvis subtilissimus, and in the
[illegible] of it, we may order and have it ac-
cording to his taste. —
[illegible] toothwashes or [illegible], which are so rich
[illegible] in their rapidly detergent and [illegible]
properties, are all more or less injurious on account
of the acids they contain. —
[illegible] should never be used except in

the experienced dentist. —

Powdered charcoal was very much used, but is not good, because, although it may be very fine, yet, it will, till certain small particles, lurking in cavities in teeth, which may be detected under a magnifying glass, and which will in time, by their gradually eating away the enamel and the collum dentis on the gingiva. —

No powerfully detergent medicaments ought to be used, because they certainly destroy, may injure the teeth, either by chemical or mechanical action. —

To remove any bad smell the chlorinum may be used in the proportion 1:100. or chlorinum; but the latter in very thin solution, because otherwise, the teeth will acquire a brownish color. It should be used in the proportion of 5:100, and of that a teaspoonful in a glass of water is sufficient

to remove the unpleasant smell. —

If the teeth are very sensitive we may use for the purpose of removing the soft dentine without pain any of the following medicaments:

1. Chloride of Zinc may be used in a well dried cavity, and best in crystallized form, although it may be used also in liquid form. —

2. Chromacid should be used with great care.

3. Common washing-soda is also very good.

4. Creosote, when used, should be first warmed a little, and the wool, upon which it is applied, should also be dipped slightly in morphium, to prevent the pain, which it might otherwise occasion. —

5. Chloroform mixed with radix aconitum is a very effective medicament. —

6. Nitras argenticus (lapis infernalis) should be used, where the dentine or the pulp canal is exposed.

7. morphium. —

8. electricity. —

9. arsenicum has also been used. Though the practice should be condemned, on account of the danger of its destroying the pulp, and of its occasioning periostitis, and even of it[illegible] etc. —

10. Dental Näboli is not always effective. —

11. Aether is used with Richardsons pulverizator.

12. Chloroform may be applied on a pocket-[illegible] or in a quantity sufficient to diminish the sense of pain, without producing unconsciousness. —

After having used chloroform mixed with radix aconitum, we can generally excavate, and insert the permanent filling immidiately, without causing the patient any pain. In a decayed tooth, having a very thin bottom, owing to the decay having worked its way nearly to the [illegible]

we can allow this thin dentine to remain; inserting metallic a cement filling immediately over it, and after solidification, excavate the remaining portion of decayed dentine; smoothing the walls of the cavity, and cutting down to a firm border all weak and ragged edges and removing all sharp corners within the cavity. —

Before putting in the cement-filling, we should dash the bottom with a little carbolic acid, in order to prevent the pain, which frequently occurs after filling with these various cements. —

If the pulp is exposed, and either unavoidably, or if it has been accidentally wounded, we must first cover it and afterwards cover it over with first, a concave-convex disk of gold or platinum with its concavity downwards over the pulp, and with its convexity upwards; and over this a cement-filling, and the permanent filling of gold or any thing else over that again. —

We will now consider briefly the various materials

at present in common use for filling different teeth with their various cavities, respectively.

Gold must be regarded as a permanent filling-material, which may be used in a variety of forms, and applied in various ways. It may be used for all cavities, having strong walls and good bottoms; and even in teeth with bad bottoms, provided, we first prepare the bottom for the gold-filling by covering it in the manner, we have already described. —

On account of the unpleasant effect upon the eye, occasioned by the polished gold, when used upon the labial and approximal surfaces of the front teeth, it should not be used for the latter; but, if so used, we should be careful to obviate the disagreeable appearance by giving a dull surface to the gold. —

Platina may be (worked) as the foil material next to gold, being even superior to it in one respect viz.: that it is a non-conductor, whereas gold is a good conductor

a Hood in addition to it in one respect, viz: that it oxidizes. The use or its use is, therefore, the same as that of gold. Cement in order to render the two metals, and is called the variolus and cannot be used in many cases, and may be used in all cavities on the masticating surfaces of the molars and bicuspids, and also on the anterior surfaces of the teeth, provided the cavities are of circular form. However, they should not be used upon the front teeth on account of the blackish appearance, which they impart to them during partial fusion of the metals. In using a hood, the cavity should be excised, so as not to produce indigestion. Although amalgam cannot be regarded as a permanent filling, yet we have sometimes found amalgam fillings to be good, and almost unchanged after a period of fifteen or twenty years. Cement, which may be used in all teeth, is not regarded as a permanent filling, although many cement fillings [illegible]

good after ten or fifteen years. —

Tills Stopping forms likewise, a very good material to use in all cases, and may stand good during four or five years. —

To speak of all the different sorts and forms of this materials, their various modes of application and manipulations in the dentist, when used in filling teeth, would be out of place in this Thesis. —

3 1198 05630 0184
N/1198/05630/0184X

378.748 POE 1881

3 1198 05630 0184
N/1198/05630/0184X